ABSTRACT

The invention relates to a process for making high-performance polyethylene multi-filament yarn comprising the steps of a) making a solution of ultra-high molar mass polyethylene in a solvent; b) spinning of the solution through a spinplate containing at least 5 spinholes into an air-gap to form fluid filaments, while applying a draw ratio DR_{fluid}; c) cooling the fluid filaments to form solvent-containing gel filaments; d) removing at least partly the solvent from the filaments; and e) drawing the filaments in at least one step before, during and/or after said solvent removing, while applying a draw ratio DR_{solid} of at least 4, wherein in step b) each spinhole comprises a contraction zone of specific dimension and a downstream zone of diameter D_n and length D_n with L_n/D_n of from 0 to at most 25, to result in a draw ratio $DR_{fluid} = DR_{sp} * DR_{ag}$ of at least 150, wherein DR_{sp} is the draw ratio in the spinholes and DR_{ag} is the draw ratio in the air-gap, with DR_{sp} being greater than 1 and DR_{ag} at least 1.

The invention further relates to a high-performance polyethylene multifilament yarn, and to semi-finished or end-use products containing said yarn, especially to ropes and ballistic-resistant composites.